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WAR ON DRUGS, WAR ON DOPING?
A COMPARATIVE ANALYSIS AND ITS POLICY IMPLICATIONS

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Conference: "Evaluating the Unintended Effects of Anti-Doping" Aarhus University, 27-28 August, 2015



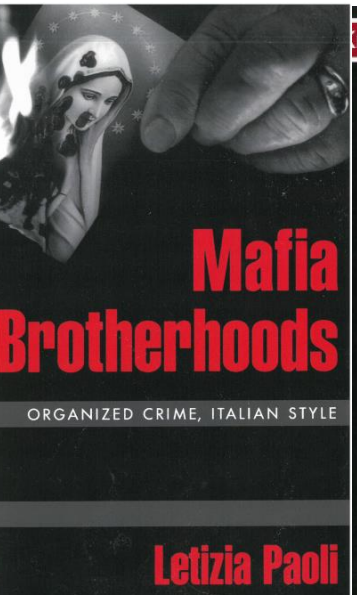
The motivations of a comparison

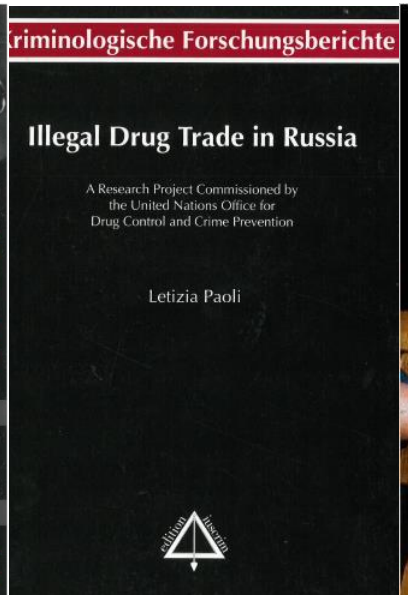
- Personal curiosity
- Broader scientific and policy interest
  - Drug markets well studied, limited research on market for doping products (“doping market”)
    - Growing presence of underworld in sportsworld is feared
  - Avoid repeating war on drugs mistakes, inform development of better doping control policies

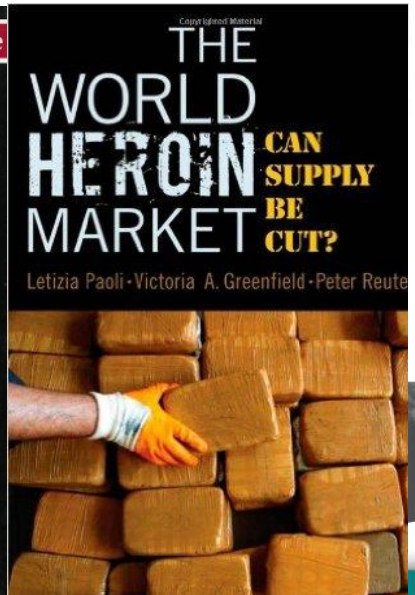


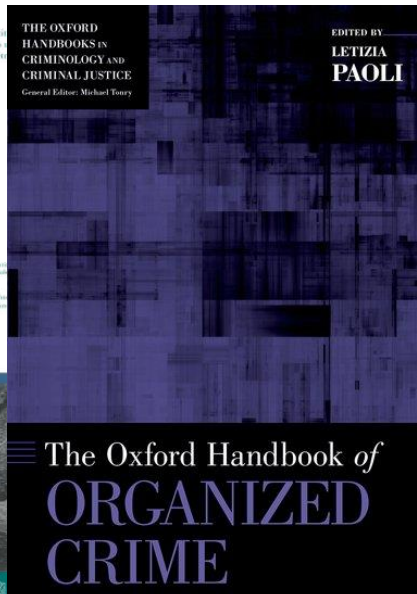
Data sources

- More than twenty years of research on drug markets, organized crime and respective control policies



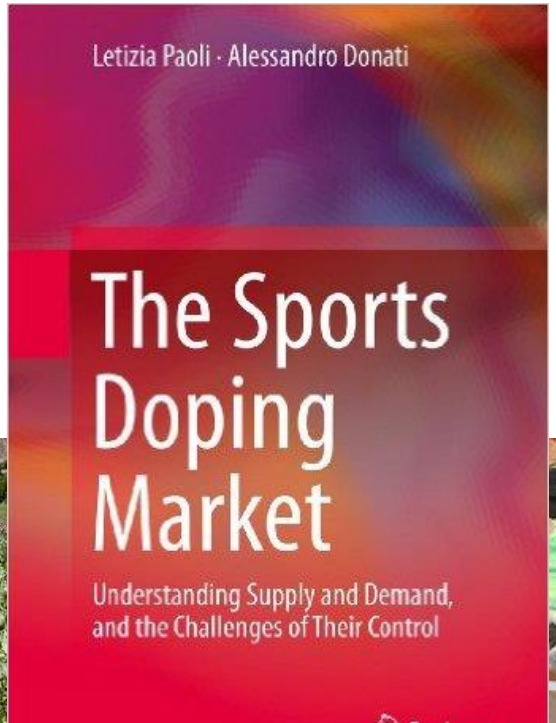






Data sources

- More than fifteen years of research on drug markets, organized crime and respective control policies
- Five years of research and three projects on doping



DES PRATIQUES COMMUNAUTAIRES AU MARCHÉ DU DOPAGE
Évolution de la distribution des produits dopants dans le cyclisme
Bertrand Fincoeur, Letizia Paoli

Médecine & Hygiène | « Déviance et Société »

2014/1 Vol. 38 | pages 3 à 27

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- More than fifteen years of research on drug markets, organized crime and respective control policies
- Five years of research and three projects on doping
- Scientific and grey literature



Outline

- Comparison of drugs/doping markets and policies on
  1. Products and their legal status
  2. Prevalence of their use
  3. Suppliers, including the latter's background, motivations and modus operandi
  4. Distribution chains and the latter's legal status
  5. Role of state agencies/representatives in market
  6. Control policies, including history, goals, justification and effectiveness
- Conclusions and policy implications



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1. Products and their legal status

- Despite partial overlap of lists of prohibited substances, notable differences in core substances of two groups
  - Illegal drugs v. medicines
    - **Fully illegal v. quasi-illegal markets**
- Differences are decreasing due to expansion of internet exchanges and rise of “legal highs”/designer drugs



2. Prevalence of use

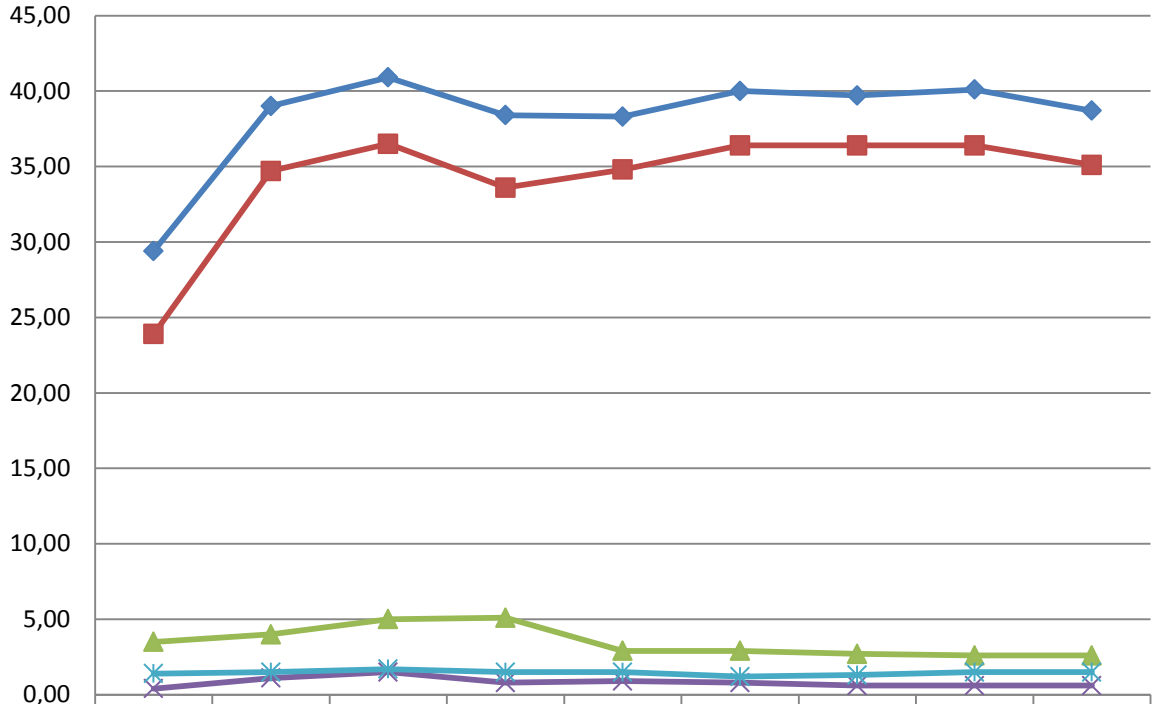
- Paoli and Donati (2014)'s estimates of doping users in Italy:

	Users of all doping substances	% of total	Users w/o cannabis or cocaine	% of total
Athletes	185,000	73%	150,000	69%
Body-builders	68,700	27%	68,700	31%
Total	**253,700**	100%	**218,700**	100%

  - Super elite athletes targeted by CONI/WADA account for 4% of doping athletes
- Comparison with illegal drugs: Numbers of doping users
  - Higher or similar to heroin (98,000 users based on 0.25% past-year prevalence rate or 218,000 opiate users needing treatment)
  - Much smaller than cocaine (353,000 users based on 0.9% rate)
  - Dramatically lower than cannabis (>2 million users per 5.2% rate)

Ranking of substances confirmed by US time series

Prevalence of use of various drugs in 12th grade US students – Years 1991-2014



	1991	1995	2000	2005	2010	2011	2012	2013	2014
Any illicit drug	29,40	39	40,9	38,4	38,3	40	39,7	40,1	38,7
Cannabis	23,9	34,7	36,5	33,6	34,8	36,4	36,4	36,4	35,1
Cocaine	3,5	4	5	5,1	2,9	2,9	2,7	2,6	2,6
Heroin	0,4	1,1	1,5	0,8	0,9	0,8	0,6	0,6	0,6
Steroids	1,4	1,5	1,7	1,5	1,5	1,2	1,3	1,5	1,5

Source: Monitoring the Future, 2015

On the basis of archetypal profiles Paoli and Donati also (guess-)estimated usage

Substance types	Athletes	Body-builders	Total doses per type	% of total
Anabolic agents	45,304,348	173,522,903	218,827,251	**58.93%**
Peptide hormones, growth factors and related substances*, of which	19,956,522	3,767,419	23,723,941	6.39%
- EPO	7,675,907	0	7,675,907	2,07%
- GH**	n.a.	3,564,001	3,767,419	0,96%
- Chorionic Gonadotropin	12,280,615	203,418	12,484,033	3,36%
Beta-2 agonists	13,130,435	11,081	13,141,515	3.54%
Hormones and metabolic modulators	0	132,968	132,968	0.04%
Diuretics and other masking agents	32,391,304	55,403	32,446,708	8.74%
Stimulants	24,739,130	27,036,774	51,775,905	13.94%
Narcotics	7,000,000	0	7,000,000	1.89%
Glucocorticosteroids	21,130,435	531,871	21,662,306	5.83%
Beta-blockers	2,608,696	0	2,608,696	0.70%
Total doses	166,260,870	205,058,419	**371,319,290**	
Percent of total	44.78%	**55.22%**	100.0%	

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Steroids and body-builders account for lion's share of doses

3. Suppliers

- Italian doping suppliers (Paoli and Donati, 2014) are, unlike most drug dealers/traffickers, not marginalized:
  - Mostly Italian
  - Few have doping-related or other criminal records
  - Most have legitimate professions or occupations (see next)



Suppliers' legitimate professions

Leading relevant professions of the suspects reported in the NAS Investigation Database – 1999-2011

Profession	No. of suspects
Gym owners or managers and body-building instructors	158
Veterinary physicians, breeders, horse drivers	140
Owners/managers of dietary supplement shops	64
Pharmacists	20
Physicians	17
Staff members of cycling teams	12
Sports federation officials	10
Law enforcement and military staff	10
Hospital employees	10
Employees and salesmen of (para-) pharmaceutical companies	6
Staff of private security companies	2

Source: Paoli and Donati, 2014

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  - Mostly Italian
  - Few have doping-related or other criminal records
  - Most have legitimate professions or occupations (see next)
  - Very limited mafia involvement



Suppliers are mostly white-collar criminals

Category	Type
Gym	Gym managers or owners and body-building instructors Dietary supplement shop managers or owners
Healthcare	Pharmacists Physicians Hospital, health clinic and nursing home employees (Para-) pharmaceutical company employees or salesmen
Organized sports	Sports team staff members Sporting federation staff members
Horseracing	Veterinary physicians Breeders Drivers
Semi-professional sportspeople	Elite athletes, and their family members Hard-core body builders, including law enforcement, military and private security company staff, and their family members
Other	Individuals without distinctive professions or occupations

Source: Paoli and Donati, 2014

For sport-related categories, financial gain is not main aim

Suppliers are mostly white-collar criminals

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Source: Paoli and Donati, 2014

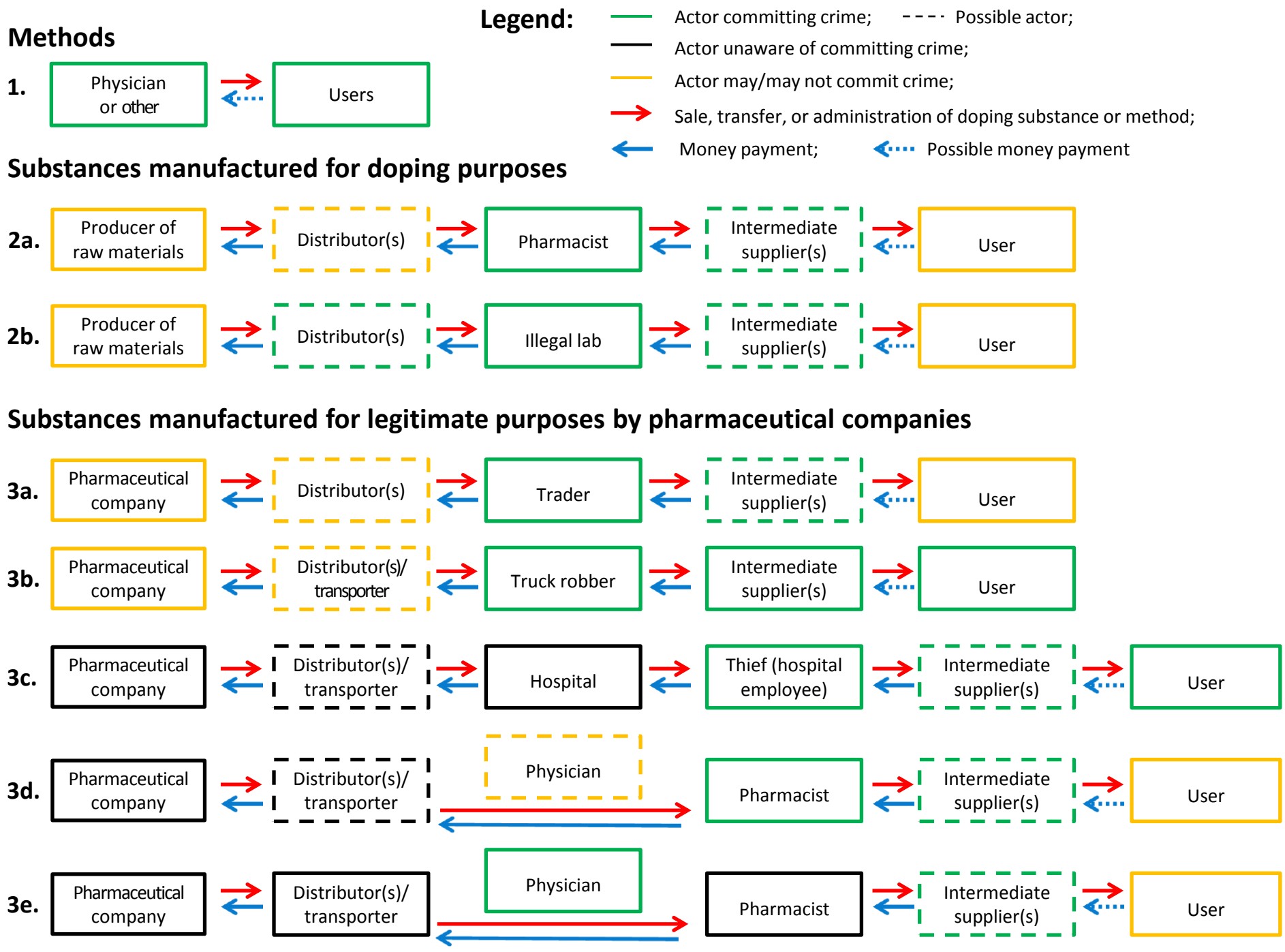
No evidence of violence of bribery…

… but frequent abuse of positions of authority and athletes' trust

4. Distribution chains and their legal status

- Illegal drug distributions chains are always illegal, doping chains are mostly not
  - No illegal market for doping methods
  - Most doping substances are produced “legally” and diverted at different stages from production sites to pharmacies
    - ➢ **Lower risks, lower profits**
- In both illegal drugs and doping markets users bypass domestic distribution chains with internet




Legend:
Actor committing crime;
Possible actor;
Actor unaware of committing crime;
Actor may/may not commit crime;
Sale, transfer, or administration of doping substance or method;
Money payment;
Possible money payment
Methods
1.
Physician or other
Users
Substances manufactured for doping purposes
2a.
Producer of raw materials
Distributor(s)
Pharmacist
Intermediate supplier(s)
User
2b.
Producer of raw materials
Distributor(s)
Illegal lab
Intermediate supplier(s)
User
Substances manufactured for legitimate purposes by pharmaceutical companies
3a.
Pharmaceutical company
Distributor(s)
Trader
Intermediate supplier(s)
User
3b.
Pharmaceutical company
Distributor(s)/ transporter
Truck robber
Intermediate supplier(s)
User
3c.
Pharmaceutical company
Distributor(s)/ transporter
Hospital
Thief (hospital employee)
Intermediate supplier(s)
User
3d.
Pharmaceutical company
Distributor(s)/ transporter
Physician
Pharmacist
Intermediate supplier(s)
User
3e.
Pharmaceutical company
Distributor(s)/ transporter
Physician
Pharmacist
Intermediate supplier(s)
User

5. Role of state agencies and representatives in market

- Persistent involvement of state(-funded) sports bodies/ officials is most startling peculiarity of doping market
  - Mostly protectors/funders, occasionally also suppliers
- No parallel in illegal drug markets of developed countries
- No Italian specificity

Complemented by protection, tolerance and corruption of international sports bodies



6. Policies: Evolution and key components

- International drug policy started to develop in 1900s, doping policy in 1960s
- In drug policy, persistent focus on supply, in doping policy on athletes
- In each, one pillar is predominant, with weaker others
  - In drug policy, repression
  - In doping policy, elite athletes testing



6. Policies: goals and justifications

- Drug policy is aimed to reduce use of illegal drugs
  - Complemented with harm reduction since 1980s
- Doping policy is aimed to both reduce harms of doping use and ensure respect of sport ethics
  - De facto focus on latter goal and elite athletes/competitions
- In neither field, adequate justification of drugs/products prohibited
- In neither field, systematic assessment of effectiveness or of perverse interactions between goals/pillars



6. Policy: Effectiveness?

- Drugs: Growing evidence that repressive interventions are ineffective AND harmful
  - Treatment, harm reduction and some prevention interventions are effective
- Doping: Contradictory data about athletes testing
  - Repression can deter white-collar suppliers and protectors
  - State funding also offers powerful leverage



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➢ **Conclusions and policy implications**



Conclusions

- Significant differences between two markets
  - Illegal v. quasi-illegal
  - Ordinary criminals v. white-collar criminals
  - Role of state agencies and representatives in markets
- Differences offer opportunities for doping control
  - E.g., repression and state funding
- Common unclearness (and hypocrisy?) about policy goals, very limited policy evaluation
  - But supply-reduction cannot reduce availability or use



Policy implications

- Legalize everything?
- Not an option for many products, especially in doping
- If legalization is chosen, many regulatory options
  - In most cases in combination with repression/illegal markets
- Harm reduction could be key criterion for both policy fields



International Journal of Drug Policy 23 (2012) 6–15

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Commentary

If supply-oriented drug policy is broken, can harm reduction help fix it? Melding disciplines and methods to advance international drug-control policy☆

Victoria A. Greenfield[a,*], Letizia Paoli[b,1]

[a] Department of Economics, U.S. Naval Academy, Annapolis, MD 21402, Unit
[b] LINC, Leuven Institute of Criminology, K.U. Leuven Faculty of Law, Hoover

doi:10.1093/bjc/azt018

BRIT. J. CRIMINOL. (2013) **53**, 864–885
Advance Access publication 13 May 2013

A FRAMEWORK TO ASSESS THE HARMS OF CRIMES

VICTORIA A. GREENFIELD AND LETIZIA PAOLI*

Journal of Drug Issues
XX(X) 1–30

DOI: 10.1177/0022042613475614
jod.sagepub.com
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The Harms of Cocaine Trafficking: Applying a New Framework for Assessment

Letizia Paoli[1], Victoria A. Gr

International Journal of Drug Policy 26 (2015) 277–289

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Research paper

Assessing the harms of cannabis cultivation in Belgium

Letizia Paoli[a,*], Tom Decorte[b], Loes Kersten[a]

What harm-reduction in anti-doping can entail:

- Giving up idea of “doping-free” world
- More thorough justification of product prohibitions
- Legalization of least harmful products
- Better information about harms to users
- Shift from elite athletes to sportspeople
- Protection of interests of non-doping athletes
- Banning of other harmful practices in elite sports
- Valuable metric for policy evaluation



Thank you

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Backup slides



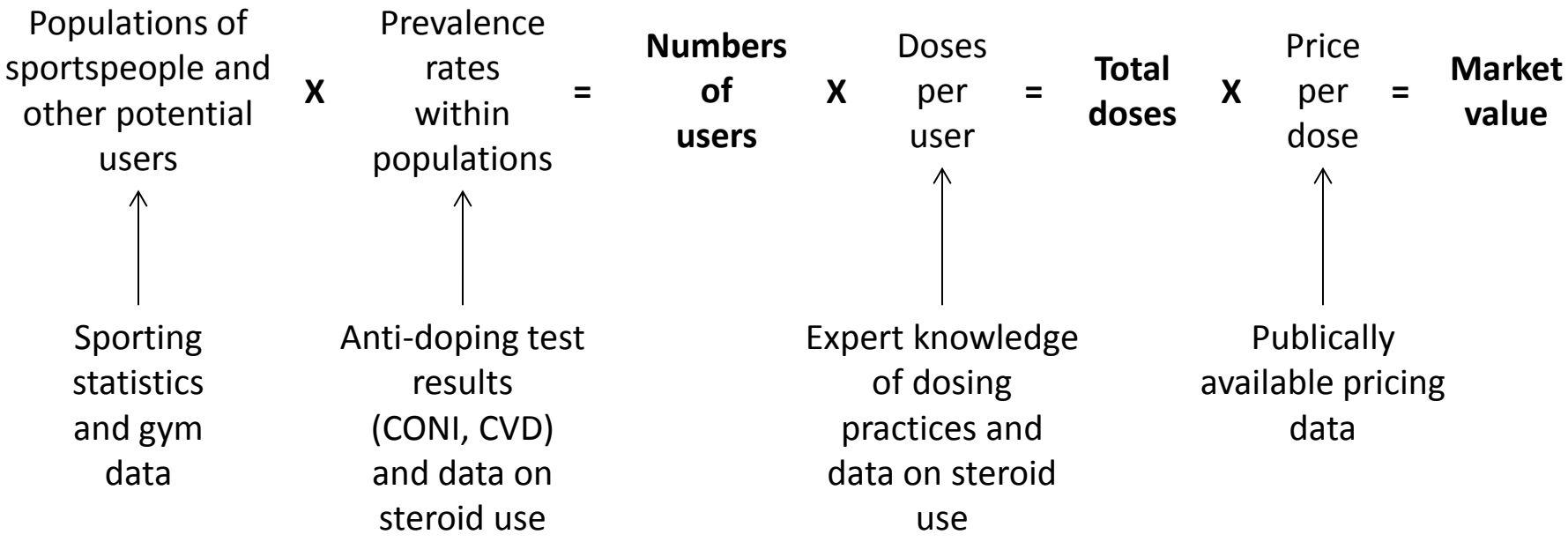
Paoli and Donati (2014) benefited from collaboration with Italian authorities

- Drew on multiple data sources, largely from criminal justice system, i.e., Police Command for Health Protection (NAS)
  - Official documents of 46 anti-doping investigations
  - 80 data files on major NAS investigations from 1999 to 2009
  - Data on anti-doping activities of all 38 NAS Branch Offices
  - Seizure data from all police forces
  - Interviews with 26 NAS officers
  - Interviews with 7 prosecutors and 2 other experts
  - All relevant statistics, e.g., on sporting and anti-doping testing in Italy
  - Scientific literature, grey literature, media reports, pharmacy price lists
- Trianguated data to validate findings

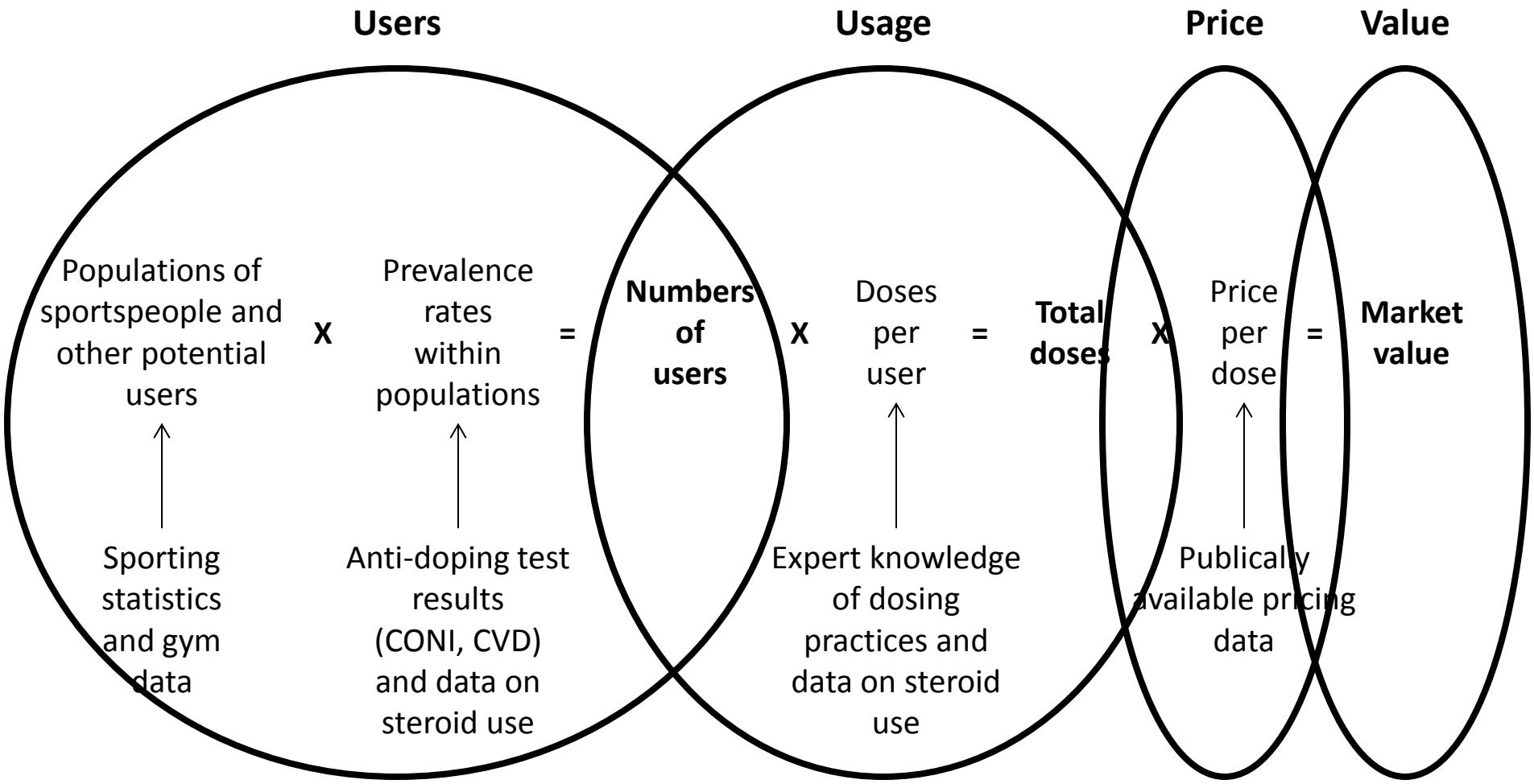
*"Comando Carabinieri per la Tutela della Salute"

Paoli and Donati (2014) adopted "novel" market approach

- Depict legal and policy environments, suppliers, and distribution chains
- Develop market estimate, consisting of



Market estimate can be framed in terms of users, usage, price, and value



Users

Potential users consist of sportspeople and "not-sportspeople"

Category	Notes	Number
Sportspeople	Age 15+	13,780,000
• Competitive	Referred to as "athletes"	4,690,000*
- Elite athletes	Competing nationally or internationally, as professionals or amateurs; Further distinguished as "super elite" athletes	10,200**
- Recreational athletes	Competing sub-nationally	Just < 4,690,000
• Non-competitive	Not referred to as "athletes"	
- Body-builders	Largely affiliated with gyms	1,270,000***
- Other sportspeople	Engage non-competitively in regular or occasional physical exercise	7,820,000
Not-sportspeople	In rare instances, others age 15+	≤ 40,000,000

Sources: Istat (2007) for data on total and competitive sportspeople, except super elite athletes; Ministries of Sports and Social Solidarity for data pertaining to body-builders

Notes: *unrounded figure is 4,685,257; **Super elite only, including some juveniles; ***Potential body builders, drawing on surveys of gym attendance and availability of body-building equipment

Anti-doping test results provide some insight to prevalence of use among athletes

- Government agencies publish data on number and results of anti-doping tests of athletes
  - CONI* and sports federations test elite athletes
  - CVD** tests recreational athletes
- Data have substantial shortcomings
  - Few out-of-competition tests
    - Elite athletes can anticipate tests
    - Recreational athletes might be less able to anticipate tests
  - Testing (urine) only addresses certain drugs
  - Evidence suggests non-trivial incidence of cheating

*Italian National Olympic Committee

**Commissione per la vigilanza e il controllo sul doping e per la tutela della salute nelle attività sportive

Positive results serve as “lower bound” for calculating prevalence rates

Anti-doping test results for elite athletes, 2002-2007

	2002	2003	2004	2005	2007	Avg
Total tests	7,823	9,431	9,950	8,791	11,154	9,430
Positive results	48	62	65	52	69	59
% positive results	0.61	0.66	0.65	0.59	0.62	**0.63**

Source: CONI, 2012.
Notes: CONI has published no data about positive results since 2007; in late 2012 it published data on adverse results.

Anti-doping test results for recreational athletes, 2003-2011

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Avg 2003-11	Avg 2008-11
Total tests	740	1,556	1,875	1,511	1,607	955	1,328	1,115	1,676	1,303	1,374
# of substances	n.a.	n.a.	n.a.	40	52	n.a.	52	**97**	**80**	n.a.	76.3*
Positive results	20	42	37	37	46	39	42	53	52	40.9	46.5
% positive	2.7	2.7	2.0	2.4	2.9	4.1	3.2	4.8	3.1	**3.4**	**3.8**

Source: Ministero della Salute and ISS; several years.
Notes: *Average for 2007 and 2009-2011.

CVD also reports results by substance type

Substance types detected	2010	2011
Anabolic agents	36	16
Peptide hormones (growth factors) and related substances,* of which	10	3
- EPO	4	4
- Chorionic gonadotropin	6	2
Beta-2 agonists	6	4
Hormones and metabolic modulators	0	0
Diuretics and other masking agents	12	20
Stimulants, of which	10	13
- Cocaine	3	4
Narcotics	2	0
Cannabinoids	7	14
Glucocorticosteroids	14	10
Beta-blockers	0	0
Total substances detected	**97**	**80**

Can use data to derive

- numbers of users of doping substances in aggregate
- numbers of users of particular substances

Source: our calculations on the basis of Ministero della salute (2011) and Ministero della Salute (2011) and Ministero della Salute and Istituto Superiore di Sanità (2012)
*GH and other growth factors are not included as they were not detected in the urine tests ordered by CVD.

Bottom line for athletes depends on treatment of cannabis and cocaine users

Year	Number of athletes	% positive results on total tests w/ all substances (unrounded)	Users of all doping substances	% positive results on total tests w/o cannabis and cocaine (unrounded)	Users of doping substances other than cannabis and cocaine
2010	4,685,257	4.8 (4.75)	222,707	4.3 (4.26)	199,592
2011	4,685,257	3.1 (3.10)	145,243	2.2 (2.20)	103,076
Simple average	**4,685,257**	**-**	**183,975**	**-**	**151,334**
			185,000		**150,000**

Overall estimate of users accounts for bodybuilders but not others

- Survey and investigative data yield rough estimate of number of body builders engaging in doping
- Data not sufficient to yield compelling estimates of numbers of other potential users

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Usage

Doping doses for the main types of doping substances seized by NAS

Doping substances	1 dose
Anabolic agents	10 mg
Peptide hormones, growth factors and related substances, of which	
- EPO and other similar peptide hormones	200 IU or 1 mcg
- GH and other similar peptide hormones	1 IU or 0.333 mg
- Chorionic gonadotrophin	1,000 IU
- Gonadorelin	1.2 mg
- Adrenocorticotrophic hormone (ACTH) and other corticotrophins	0.25 mg
- Insulin	10 IU
Beta-2 agonists	2 mcg
Hormones and metabolic modulators	10 mg
Diuretics and other masking agents	25 mg
Stimulants	25 mg
Narcotics	50 mg
Glucocorticosteroids	25 mg
Beta-blockers	5 mg

Archetypal profiles address differences in consumption patterns across sportspeople

- Profiles normalized to
  - create representative athlete
  - create representative bodybuilder
- Profiles framed in terms of standard doses for each substance (see back up)
- Profiles conform to CVD detection shares for athletes and NAS seizure shares for bodybuilders

Profiles have been "vetted" but methodology under review

Steroids and body-builders account for lion's share of doses

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Key substances are excluded for which there are clues of misuse: e.g., gonadorelin

Region/Province	Packages sold	Total value	Packages sold per 100,000	Total value per 100,000
Piedmont	28,178	7,342,211	635.7	165,642
- Novara province	**4,063**	**1,113,759**	**1,184.4**	**324,673**
Aosta Valley	28	8,106	22.0	6,379
Trentino Alto Adige	97	26,557	9.5	2,607
Venetium	5,675	1,661,377	116.2	34,006
Friuli	1,645	507,734	133.6	41,248
Liguria	814	235,196	50.4	14,563
Emilia Romagna	2,942	758,387	67.8	17,482
- Ferrara province	**2,396**	**623,474**	**669.3**	**174,164**
Tuscany	851	203,713	23.0	5,494
Umbria	12	1,576	1.3	176
Marche	867	242,723	55.2	15,464
Latium	872	233,825	15.5	4,156
Abruzzo	42	5,211	3.1	390
Molise	401	147,955	125.0	46,121
Campania	12,311	2,921,818	211.8	50,268
- Salerno Province	6,207	1,508,804	561.2	136,408
Apulia	157	35,247	3.4	864
Basilicata	270	89,674	45.7	15,184
Calabria	**15,317**	**4,297,389**	**762.5**	**213,938**
- Cosenza province	**7,049**	**2,024,430**	**961.0**	**275,993**
Sicilia	8,542	2,266,027	169.6	44,980
- Caltanissetta province	**2,583**	**748,339**	**948.6**	**274,833**
- Palermo province	**5,406**	**1,393,428**	**434.3**	**111,951**
Sardegna	431	78,859	25.8	4,719
Total	**101,310**	**26,727,207**	**168.7**	**44,512**
Selected provinces and region	**35,972 (35.5%)**	**9,685,193 (36.2%)**	**674.5**	**181,616**
Rest of country	65,338	17,042,014	**119.4**	31,148
Hypothetical sales in selected provinces and region at average rate	11,564	1,661,081	119.4	31,148
Difference effective and hypothetical sales	**24,408 (24.1%)**	**8,024,112 (30.0%)**	n.a.	n.a.

Source: CVD, 2010 and Istat, for the population data.

Price

Pricing data drawn from official sources and internet

- Most doping substances are sold in pharmacies and have “official” price, which is same throughout the country
- For those that are not officially traded, i.e., no therapeutic purpose, internet websites provide some information

Official prices may be too low or too high, but certainly not “right”

Substance type	Active ingredients per dose	Average price per dose
Anabolic agents (including testosterone)	10 mg	1.12
Peptide hormones, growth factors and related substances,* of which:	Variable	4.76
- **EPO and other similar hormones**	200 IU or 1 mcg	3.09
- **GH and other similar hormones**	1 IU or 0.333 mg	13.90
- **Related substances**, of which**	Variable	2.50
***Chorionic gonadotrophin**	1,000 IU	3.27
***Gonadorelin**	1.2 mg	48.05
***ACTH and other corticotrophins**	0.25 mg	3.70
***Insulin**	10 IU	0.03
Beta-2 agonists	2 mcg	0.20
Hormones and metabolic modulators	10 mg	1.26
Diuretics and other masking agents	25 mg	0.40
Stimulants	25 mg	0.60
Narcotics	50 mg	1.28
Glucocorticosteroids	25 mg	0.49
Beta-blockers	5 mg	0.26

Source: Our calculations on the basis of the Database on NAS investigations.

- Prices in doping market may differ greatly from official prices
  - More in risky environments
  - More if other “service fees” included in net price
  - Less via internet
- Official prices of doping doses are mostly cheaper than known prices of illegal drugs
  - Exceptions are GH and gonadorelin
  - By comparison, 0.25 gram doses of heroin and cocaine cost €10.49 and €17.29 and a hashish joint €3.73

Value

Market yields modest, but not insubstantial revenues

- By multiplying official prices per dose with dosing estimates, we calculate annual retail revenues of €537 million
  - Steroids account for about €245 million or 46% of the total revenues, less than their share of doses (58.9%) due to relatively low prices
  - Peptide hormones account for disproportionately large share of revenue, i.e., 27% revenue v. 6% doses, due to relatively high prices
- Estimate is, on most counts, very conservative
  - Reflects limits of testing and excludes GH and gonadorelin
  - Omits “other sportspeople” and “not-sportspeople”
  - Draws on official price data and does not account for other “service fees”
- No information on manufacturers’ revenues or profits, as only one lab has been seized in Italy
- Most other suppliers do not earn much
  - Few physicians serving elite athletes constitute exception

How does doping market compare to those for traditional illegal drugs?

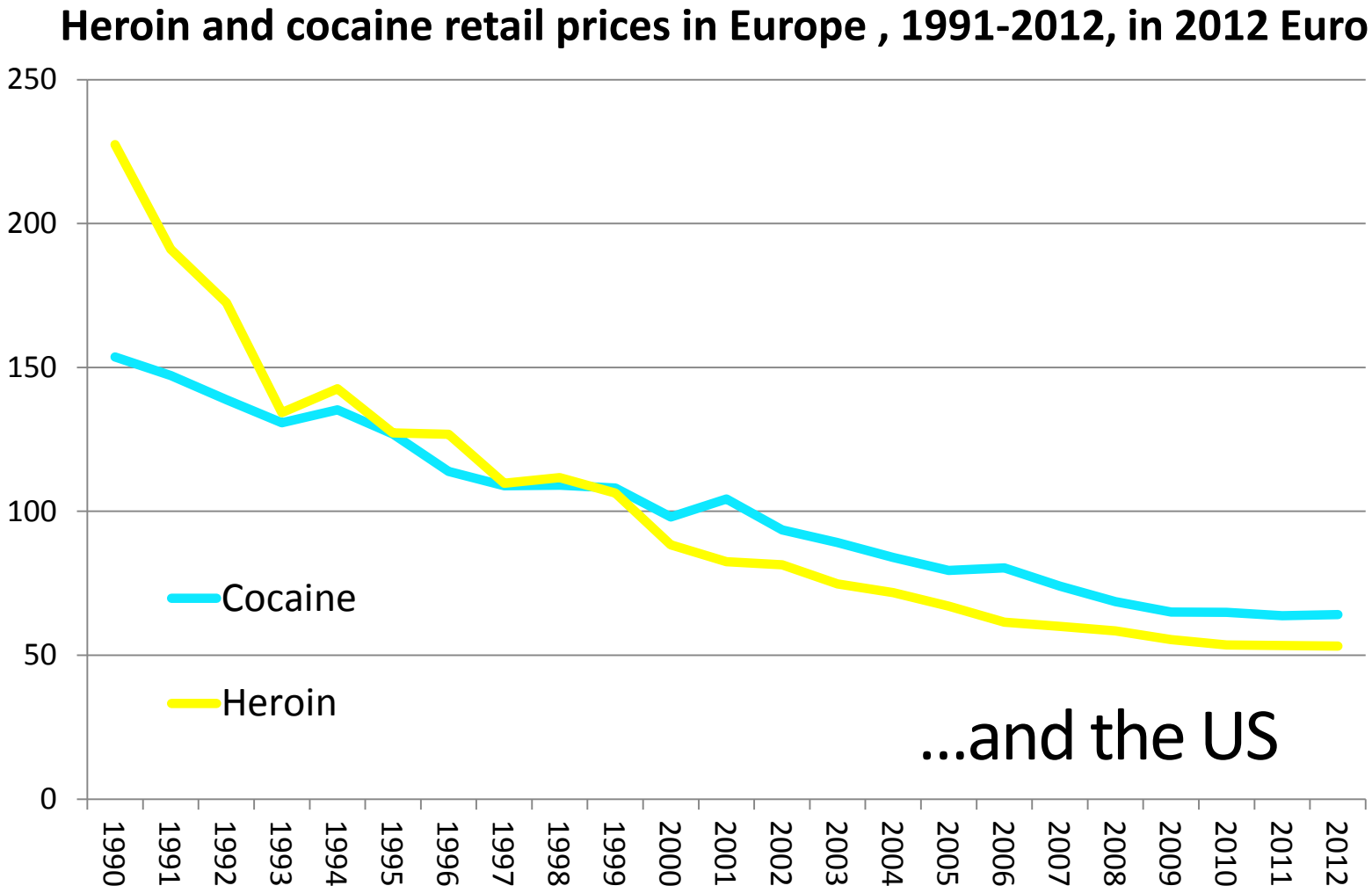
- Numbers of users
  - Roughly similar to heroin (218,425 opiate users needing treatment)
  - Substantially smaller than cocaine (353,000 users based on 0.9% prevalence rate)
- Value of market
  - Substantially smaller than heroin and cocaine (€3,685 million), on basis of “official” prices
  - Inattention to ‘risk premiums’ and other service charges may understate true value, though increasing use of internet might offset

Effectiveness of drug policy

- Growing evidence that repressive interventions are ineffective AND harmful
  - Prices of major drugs decreased in most western countries



Long-term declines in heroin and cocaine prices in Europe …



Source: UNODC, 2014.

Effectiveness of drug policy

- Growing evidence that repressive interventions are ineffective AND harmful
  - Prices of major drugs decreased in most western countries
  - Incarceration of users causes great harm
  - Upstream interventions usually only provoke “balloon effect”
  - Market changes complicate supply reduction
- Treatment, harm reduction and some prevention interventions are effective

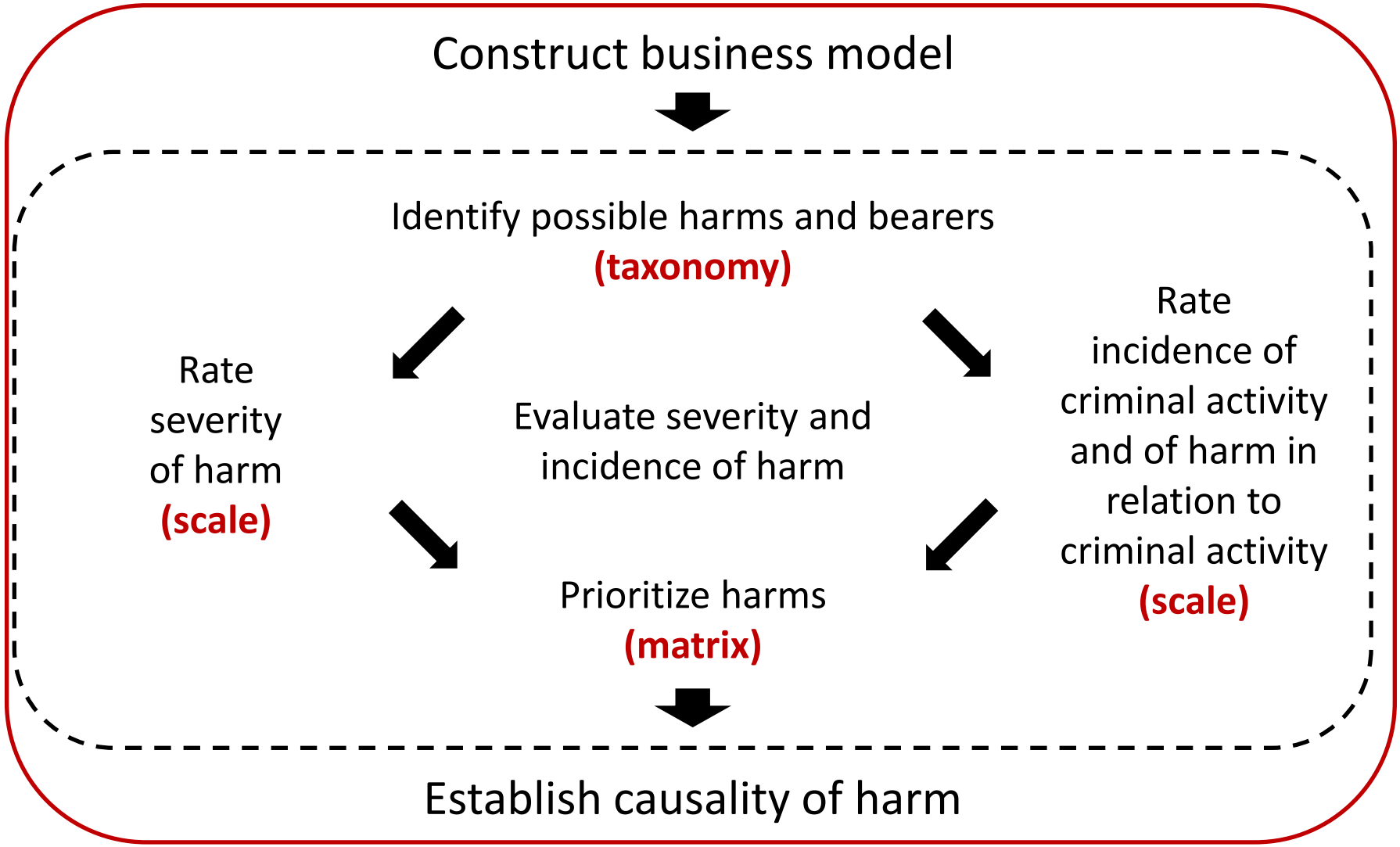


Effectiveness of doping policy

- Contradictory data about athletes testing
  - Focused on elite athletes, even if most harms are elsewhere
  - Despite considerable costs, very few positive samples
  - Evidence of changing attitudes and practices in elite cycling (Fincoeur, 2016), but not in very top cycling or other sports
    - Possible shift to more harmful substances/practices
  - Science constantly offer new doping opportunities
- Repression can deter white-collar suppliers and protectors
- State funding also offers powerful leverage



Harm assessment framework is publically available and in use*



* Greenfield, V. and L. Paoli, 2013. A Framework to Assess the Harms of Crimes, *British J. of Criminology*.

Prioritization matrix combines severity and incidence scales

Matrix of severity, incidence, and priorities

SEVERITY	INCIDENCE				
	Always	**Persistently**	**Occasionally**	**Seldom**	**Rarely**
Catastrophic	**H**	**H**	**H**	H/M	M/H
Grave	**H**	**H**	H/M	M/H	M
Serious	**H**	H/M	M/H	M	**L**
Moderate	H/M	M/H	M	**L**	**L**
Marginal	M/H	M	**L**	**L**	**L**

Source: authors based on Greenfield and Camm, 2005.
Notes: H = Highest priority; M = Medium priority; L = Lowest priority; we use "non applicable" for harms that are irrelevant in a particular context.

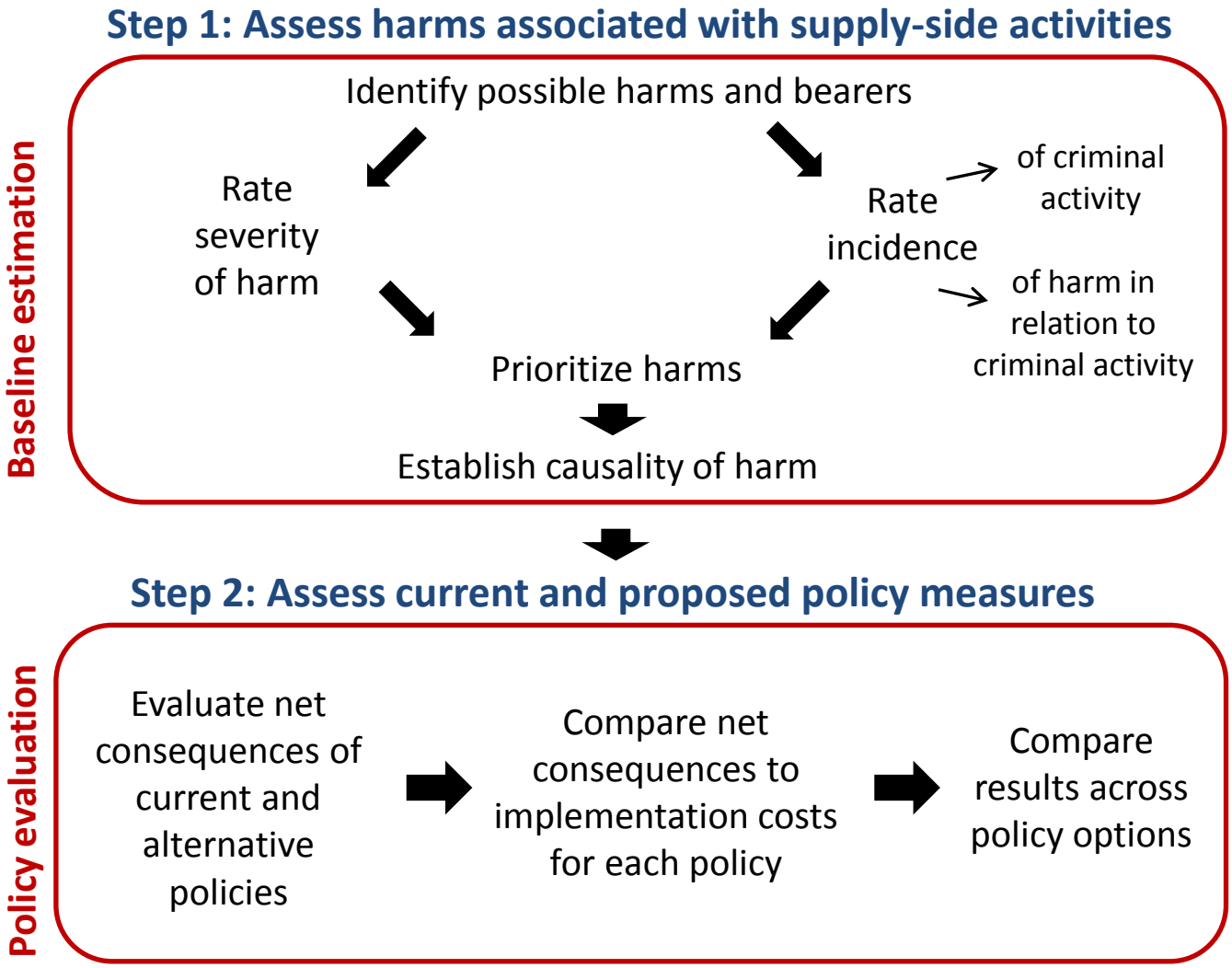
Matrix offers preliminary basis for addressing incommensurability, using quantitative and qualitative data

First applications are promising*

- Tested on cocaine trafficking and cannabis cultivation (and human trafficking) in Belgium and cocaine trafficking in The Netherlands
- Findings are partially unexpected:
  - Harms of drug supply-side activities are lower in Belgium and Netherlands than often claimed
  - Only a small set of harms to individuals' functional integrity and government's reputation consistently score higher than low
  - Most supply-side harms arise from illegal status of drugs and enforcement practices

*** Paoli, L. et al. 2013. The Harms of Cocaine Trafficking. *Journal of Drug Issues.***
Decorte, T. et al. 2014. *Cannabis Production in Belgium.* Gent: Academia Press.

Practical path forward: Harms and policy assessment



Approach marries principles of harm reduction with those of risk assessment and enables baseline "estimation" of harms for policy evaluation